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E-BRIEF

November 6, 2013

ECONOMIC GROWTH AND INNOVATION

Equipping Canadian Workers: Business Investment Loses a Step against Competitors Abroad

by
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- After decades of investing far less per worker than counterparts abroad, Canadian businesses improved their standing after 2009: by 2012, they had surpassed the OECD average and closed the gap with the United States.
- In 2013, however, growth in new private-sector plant and equipment spending in Canada seems likely to lag investment abroad, with strength in the more natural-resource-oriented provinces offset by weakness in Central Canada and the Maritimes.
- For policymakers, the good news is that Canada's relatively robust performance since 2009 suggests a lift from investment-friendly fiscal and regulatory policies; the challenge is to rebuild momentum to give Canadian workers tools to raise productivity and incomes in the years ahead.

Business investment is a fundamental driver of economic growth – a key reason why Canadians today live so much better than in the past, and better than people in less favoured countries. Comparing new investment per worker here and abroad provides a useful gauge of Canada's relative prospects for higher incomes and living standards in the years ahead. (Box 1 describes our data sources and methods.)

Unhappily, after several years of relatively robust non-residential business investment per worker, Canada appears to have flagged in 2013. Within Canada, divergent provincial performances in

This E-Brief updates similar surveys in previous years: see Robson and Goldfarb (2004, 2006); Goldfarb and Robson (2005); Banerjee and Robson (2007, 2008); and Busby and Robson (2009, 2010, 2011); and Dachis and Robson (2012). We thank the reviewers of those papers and a previous draft of this survey, notably John Baldwin, Erwin Diewert, and Andrew Sharpe, for comments and questions that have improved the analysis and presentation of these reports.

Box 1: Measuring and Interpreting Investment per Worker

Our historical comparisons use data on business capital investment in machinery and non-residential structures, and on employment, from the OECD's Economic Outlook No. 93 (June 2013) database for countries abroad, and the Canadian System of National Accounts (CSNA) for Canada and the provinces. The CSNA underwent a major revision in 2012, which produced new data for the period since 2007. We apply the rates of change in provincial investment from the old CSNA to the new CSNA levels of investment to link our historical time-series to pre-2007 data.

Our 2012 estimates and 2013 forecasts use the projections in the OECD database, and Statistics Canada's Capital Repair and Expenditure Survey. The OECD and Statistics Canada investment numbers include private businesses and government business enterprises functioning in a commercial environment. Not all the data are available for all OECD countries throughout the period: our figures include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Japan, Korea, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States. The OECD averages we report include the above countries.[a]

All dollar figures are in current Canadian dollars. We convert investment abroad into Canadian dollars using purchasing-power parity (PPP) exchange rates from the OECD. The purchasing-power adjustment allows more meaningful comparisons of the "bang per buck" of spending in different countries than market exchange rates would do, since – especially at a point in time – market rates will reflect relative domestic price levels imprecisely. To obtain comparative measures more reflective of prices for capital-investment goods and services than for goods and services generally, we benchmark the PPP measures across countries using the OECD's 2008 PPP figures for gross fixed capital formation (residential plus non-residential, separate figures not being available), and construct national time series from each country's economy-wide PPP measures before and after that date.

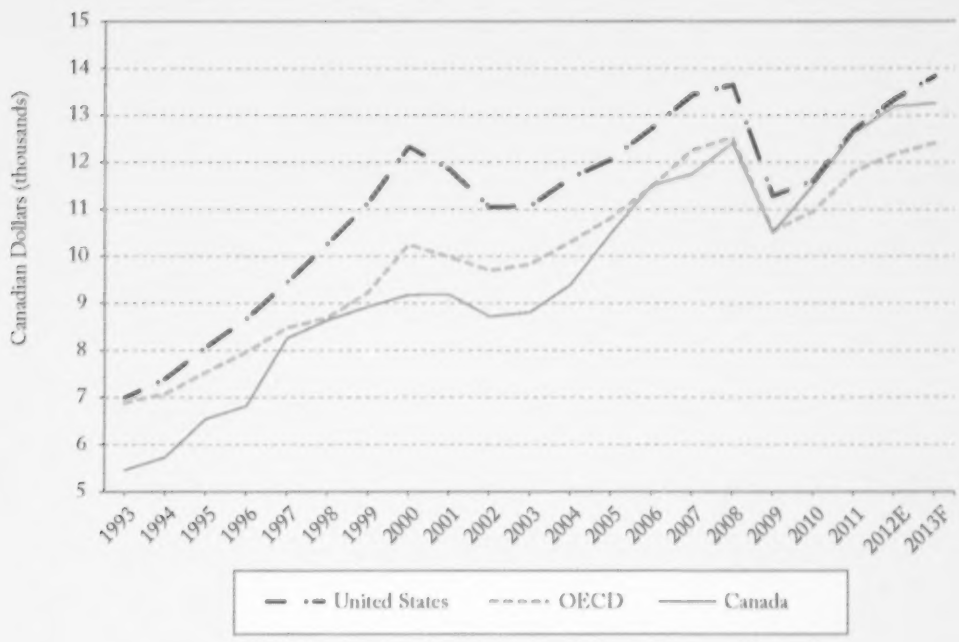
a Previous versions of this report included Italy, Mexico and Spain in the OECD comparison, but we have dropped them in this one because they no longer report private, non-residential capital investment figures to the OECD.

investment per worker are cause for concern. Changes in tax and regulatory policies, along with a supportive macroeconomic environment, can help move lagging provinces and Canada as a whole back to a leading position.

Investment per Worker: Canada's Improving Record

Because business investment is so critical to economic dynamism, the persistent lag between gross non-residential private capital spending per worker in Canada and the average among Organisation for Economic Co-operation and Development (OECD) countries in the 1990s and early 2000s was disturbing. After adjusting for price differences among countries, we find that for every dollar of new business investment per worker in the OECD, Canadian businesses invested 91 cents from 1993 to 1999, and marginally more – 94 cents – from 2002 through 2006 (Figure 1; see Table 1 for recent details). Measured against the United States, Canada's

Figure 1: Investment per Worker in Canada, the United States, and the OECD, 1993-2013



Sources: Authors' calculations from OECD, Statistics Canada.

performance looked worse yet: for each dollar of new investment per US worker in the 1990s, the average Canadian worker got only 83 cents – a gap that persisted in the early 2000s.[1]

Then, even as this disappointing record was prompting questions about whether various growth-friendly fiscal, international and structural initiatives were doing any good (see, for example, the discussion in Drummond 2011), Canada's performance began to improve. For the 2007-to-2011 period, the average investment by Canadian businesses surpassed the average for developed countries where comparable figures are available, with Canadian firms investing 101 cents per worker for every dollar invested across the OECD. They also narrowed the gap against the United States, investing 94 cents for each dollar per US worker. Preliminary 2012 data show Canadian businesses outpacing the OECD average – 108 cents per dollar across the group – and almost equalling the United States.

1 We focus on gross flows of new capital investment, rather than net flows or capital stocks. Gross flows are more straightforward to compare internationally because different treatments of depreciation make net investment and stock figures non-comparable across countries (see Tang, Rao and Li 2010 for a discussion of non-comparability of Canada and US official stock measures).

Table 1: Private Non-Residential Gross Capital Formation per Worker in Canada (by Province), the OECD, and the United States, 2002 to 2013

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012E	2013F	Average: 2002-2006	Average: 2007-2011
	(Canadian dollars)													
BC	7,200	7,400	8,000	8,800	10,100	10,200	11,100	9,800	10,400	11,900	13,000	11,800	n.m.	n.m.
AB	18,700	19,600	21,900	27,800	30,900	31,400	33,000	23,000	29,300	32,100	33,100	33,200	n.m.	n.m.
SK	10,400	11,100	10,900	13,200	15,100	16,500	20,100	21,200	25,000	26,300	24,200	22,600	n.m.	n.m.
MB	7,100	6,900	7,200	7,000	7,800	8,200	9,300	8,900	10,400	10,200	9,500	10,600	n.m.	n.m.
ON	7,700	7,500	7,700	8,200	8,700	8,600	8,800	7,900	7,900	8,700	8,300	8,500	n.m.	n.m.
QC	6,800	6,900	7,400	7,300	7,600	7,900	8,100	7,600	7,600	8,000	9,800	9,200	n.m.	n.m.
NB	5,800	6,500	6,800	7,200	9,400	9,300	10,900	9,200	8,800	8,400	8,700	8,700	n.m.	n.m.
PEI	4,700	4,700	5,200	4,900	5,300	7,100	6,700	5,000	4,600	6,300	5,200	6,400	n.m.	n.m.
NS	8,100	7,400	6,900	7,000	6,900	7,000	6,300	7,300	8,000	8,800	5,400	6,800	n.m.	n.m.
NL	9,800	11,300	13,600	14,900	13,100	11,300	13,700	12,400	14,900	20,500	32,100	35,800	n.m.	n.m.
Canada	**8,700**	**8,800**	**9,400**	**10,500**	**11,500**	**11,700**	**12,400**	**10,500**	**11,500**	**12,600**	**13,200**	**13,300**	**n.m.**	**n.m.**
OECD	9,700	9,800	10,300	10,800	11,500	12,200	12,500	10,500	11,000	11,800	12,200	12,400	n.m.	n.m.
US	11,000	11,100	11,700	12,100	12,700	13,400	13,600	11,300	11,600	12,700	13,300	13,800	n.m.	n.m.
Relative to OECD	*(index: OECD = 100)*													
BC	74	75	78	81	88	83	89	93	95	100	107	95	79	92
AB	193	199	212	257	270	256	263	218	267	271	272	268	226	255
SK	108	113	106	122	131	135	160	201	228	222	199	182	116	189
MB	74	71	70	65	68	67	75	84	95	86	78	85	69	81
ON	79	76	74	75	76	70	70	75	72	74	68	69	76	72
QC	70	70	72	68	66	64	65	72	69	68	81	74	69	68
NB	60	66	66	67	82	76	87	87	80	72	72	70	68	80
PEI	48	48	50	45	47	58	53	47	42	53	43	52	48	51
NS	84	75	67	64	60	58	51	69	73	74	45	55	70	65
NL	101	115	132	138	114	92	109	118	136	174	264	289	120	126
Canada	**90**	**90**	**91**	**97**	**100**	**96**	**99**	**100**	**105**	**107**	**108**	**107**	**94**	**101**

Notes: n.m. = not meaningful. Data for 2013 are forecast.

Sources: Authors' calculations from OECD, Statistics Canada.

Table 1: Continued

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012E	2013F	Average: 2002-2006	Average: 2007-2011
Relative to US							*(index: US = 100)*							
BC	65	67	69	73	79	76	81	87	90	93	97	85	71	85
AB	169	177	188	230	243	234	242	204	252	253	248	240	201	237
SK	94	101	94	110	118	123	147	188	215	207	182	164	103	176
MB	65	63	62	58	61	61	68	79	90	80	71	76	62	76
ON	70	68	66	68	68	64	64	70	68	68	62	62	68	67
QC	61	63	64	61	59	59	60	67	65	63	74	67	62	63
NB	52	59	58	60	74	70	80	81	76	67	65	63	61	75
PEI	42	43	44	40	42	53	49	44	39	50	39	46	42	47
NS	73	67	59	58	54	52	46	65	69	69	41	49	62	60
NL	88	102	116	124	103	84	100	110	128	162	241	259	107	117
Canada	**79**	**80**	**81**	**87**	**90**	**87**	**91**	**93**	**99**	**99**	**99**	**96**	**83**	**94**

Notes: n.m. = not meaningful. Data for 2013 are forecast.

Sources: Authors' calculations from OECD, Statistics Canada.

The Current Picture: National Softening and Regional Divergence

Canada's relatively good investment performance since 2009 is part of a broader story of Canada's relatively "good" crisis and recovery – a product both of good policies, including more solid public-sector balance sheets and steadier monetary policy than in many countries, and good luck, including continued demand for natural resources that bolstered Canada's terms of trade. As the United States and other countries recover from their more severe recessions, it is natural to wonder whether Canada's recent edge in business investment will hold up.

Disappointingly, data for 2013 suggest that Canadian business investment is now growing more slowly than in the OECD generally and in the United States particularly. Canada's 2013 per-worker tally looks likely to be around 107 cents per dollar invested across the OECD – slipping from 2012's high of 108 cents per worker – and will likely fall to 96 cents per dollar invested in the United States.[2]

To some extent, flagging investment is simply one facet of domestic demand that is weaker than it could be – a problem that the Bank of Canada's accommodative monetary policy, as it works to get inflation back up to its 2 percent target, should address (MPC 2013). Beyond macroeconomic influences felt across the country, the differing story from province to province sheds further light on Canadian performance.

Saskatchewan and British Columbia experienced robust investment over the past five years, but recent figures show investment slipping in both this year. Growth also appears to be flagging in Alberta, where 2013 investment is forecast to be about the same as in 2012. Among the natural-resource-rich provinces, Newfoundland and Labrador stands out for continued investment strength, with a projected large per-worker increase in 2013.

Among less commodity-driven provinces, Manitoba looks set to do well in 2013. Unfortunately, the story in Central Canada is one of continued underperformance. Investment in Ontario in 2013 seems likely to grow at about the same pace as the rest of the OECD, with Ontario's tally rising from $8,300 to $8,500 per worker and the OECD's rising from $12,200 to $12,400 – which would mean that Ontario workers continue to get less than 70 cents of investment for every dollar of investment their OECD counterparts receive (and only 62 cents for every dollar US workers receive). Levels in Quebec are better, but appear to be slipping after an uptick in 2011 and 2012.

The Maritime Provinces in general are not doing well. Nova Scotia seems likely to improve, but from a very weak performance in 2011 and 2012, New Brunswick has shown a declining trend for many years, and the average worker in Prince Edward Island, once again, appears likely to get only about 50 cents of new investment for every dollar the average US worker gets.

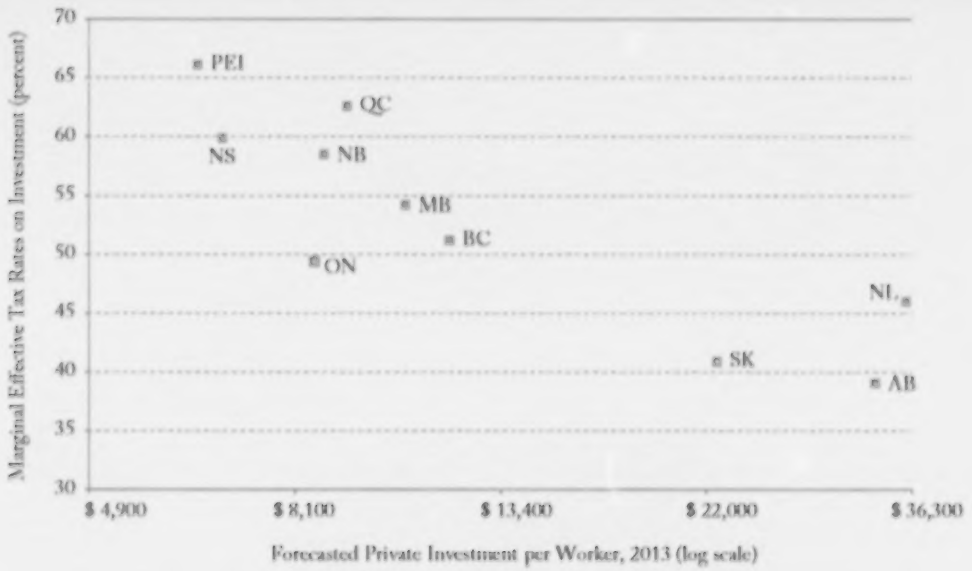
Future Prospects: How to Do Better

Many factors might explain inferior investment in some jurisdictions.[3] Measurement is inevitably an issue, especially when comparing internationally, and most especially for one type of investment widely seen as very

2 We would like to extend this comparison of private investment per worker to the emerging giants of India and China as well. But we have no trustworthy data on the purchasing power parities for investment in plant and equipment installed in those countries. We know their nominal investment per worker is much lower than Canada's, and their real investment is likely considerably lower as well. We also know, however, that their high investment and rapid growth mean that Canada's lead over them is shrinking. See, for example, *The Economist* (2012).

3 Some commentators have identified aspects of Canada's economy not readily susceptible of policy treatment as suspects, including greater risk-aversion or other deficiencies among Canadian managers, ignorance of the productivity-enhancing potential of new technologies, relatively low labour costs, and industry structure. We focus here on problems policy can more likely remedy.

Figure 2: Marginal Effective Tax Rates on Investment and Business Investment per Worker by Province, 2013



Sources: Authors' calculations from Found, Dachis and Tomlinson (2013) and Statistics Canada data as described in the text. Marginal effective tax rates are the total of federal, provincial, and net municipal taxes in the largest municipality by population in each province: from west to east, Vancouver, Calgary, Saskatoon, Winnipeg, Toronto, Montreal, Saint John, Charlottetown, Halifax, and St. John's.

important for growth: information and communication technology (ICT).[4] Yet the gap in ITC investment between Canada and the United States is large enough that measurement problems alone are unlikely to explain it, and suggests that such measures as liberalization of competition and foreign-investment rules in telecommunications would be useful policy changes to foster more ITC investment in Canada (Canada 2008).

Another major influence on business investment is taxation. Taxes on corporate incomes, business inputs, and capital drive a wedge between the potential returns on a project and what the business owners – and, through productivity gains, their workers – will receive. Generally, Canadian taxes have become more supportive of investment over the 2000s. Lower tariffs on capital equipment since the crisis are lightening the burden of a particularly distorting tax. But many problems remain. British Columbia's replacement of its Harmonized Sales Tax this year with a less investment-friendly retail sales tax may help explain its 9 percent drop in investment per worker, the worst percentage drop in the country.

4 Sharpe and Rai (2013) report that information and communication technology investment per worker in Canada is 58 percent of the equivalent amount per US worker, with the investment gap in software being especially large: a Canadian worker only gets about 40 cents of software investment per dollar received by a US worker. Because the quality and nature of the products businesses buy in information and communication technology change far faster than in, say, warehouse construction, the challenge of adjusting for purchasing power when comparing countries – even countries as similar as the United States and Canada – is especially tough in this area.

Business property taxes are also important. Recent work (Found and Tomlinson 2012; Dachis, Found and Tomlinson 2013) shows that their impact on incentives to invest is very large – in some provinces and cities, larger than all other taxes combined. The size of this tax bite, especially when provincial and net municipal property taxes are in the mix, is so large that differences in these tax rates among jurisdictions almost certainly matter.

How much do higher METRs reduce investment? Many factors other than current tax rates affect investment, including booms and busts in natural resources, which drive investment in a sector that is large and capital-intensive, and which is less affected by property taxes than most other industries. Since a large amount of theory and evidence (see especially Dahlby and Ferede 2011) supports the notion that marginal tax rates do affect behaviour, and data from Statistics Canada on the mining and energy shares of provincial GDP give us some ability to mitigate the impact of natural-resource cycles on investment, we undertake a statistical analysis of the relationships between METRs on investment generally, and property taxes on investment in structures across Canada.[5]

After controlling for the share of each province's economy that is attributable to either the mining or energy sector, we find that a one percentage point increase in the overall METR is associated with lower overall private investment per worker in a range between 1.1 and 2.1 percent. Looking at only the structures component of investment, using the same controls, we find that each percentage point increase in the METR due to business property taxes is associated with lower total provincial investment per worker in non-residential structures in a range between 2.5 and 3.2 percent.

The readily apparent tendency for investment rates to be lower where tax rates are higher, and vice versa, however, suggests that reforms to some of the taxes that contribute most to the marginal effective tax rates in the provinces where they are high – including business property taxes – could improve investment performance.

Restoring Canada's Investment Edge

Even if Canada's relatively robust per-worker investment story in recent years partly reflected tough times elsewhere, notably in countries that benefited less from strong natural-resource demand, it offered hope that growth-friendly policies were paying off. Preliminary figures for 2013 suggest that Canada may have lost some of its edge, however. The fact that businesses in Central Canada and the Maritimes continue to equip their workers with new

5 We run separate regressions using two left-hand side variables: (1) the log of forecast 2013 per worker private non-residential gross investment, and (2) the log of forecast 2013 per worker non-residential structure investment. We include on the right-hand side of the regressions on structure investment the business property tax component of the METR. For regressions on overall per worker investment, we include a control for the overall METR. We run four regressions on each specification (eight in total), controlling for the (a) 2008-2012 average share or (b) 2012 share of provincial GDP attributable to (i) the energy sector or (ii) the mining sector. The mining sector is North American Industry Classification System (NAICS) code 21. Energy combines the NAICS code sectors 211, 2121, 21229, 21311A, 2211, 2212, 32411, 32419, and 486. Further details of the regressions from CANSIM Table 379-0028 data are available upon request. Ten provinces, and only one year of METR data, do not constitute a large number when it comes to conventional measures of statistical significance (based on the null hypothesis of no effect), but we find that METRs are statistically significant from zero in a number of regressions.

tools at a rate so much below businesses elsewhere in the country and abroad shows that Canada can do better in providing its workforce with new plant, equipment and technology.

From a macroeconomic perspective, accommodative monetary policy that will spur growth and investment remains appropriate. And over the medium and longer term, regulatory reforms that spur competition and innovation, along with reforms to investment-unfriendly taxes, can help Canada build on the performance of the past few years, and improve Canadians' prospects for higher incomes and better living standards in the future.

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This E-Brief is a publication of the C.D. Howe Institute.

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